

## NEW STONEFLIES FROM CALIFORNIA AND OREGON

(Plecoptera)

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In studying a large number of stoneflies from western North America, collected by the writer and others, several new species have been found, the sexes have been associated for several species, and it seems necessary to propose new generic or subgeneric names for certain forms. Fourteen such species, of which eight are new, are treated below.

The writer is indebted to Dr. E. S. Ross, California Academy of Sciences, Dr. Robert L. Usinger, University of California, and to Mr. Harry P. Chandler, California Fish and Game Department, for sending material upon which a part of this paper is based.

## PELTOPERLA (SOLIPERLA) THYRA Needham and Smith

1916. *Peltoperla thyra* Needham and Smith, Can. Ent., 48:87, male.1925. *Peltoperla thyra* Needham and Claassen, Monog. Plecop., pp. 170-171.1952. *Peltoperla (Soliperla) thyra* Ricker, Syst. Studies Plecop., p. 157, placed in new subgenus *Soliperla*.

Among material of *Soliperla* from the collection of the California Academy of Sciences are two males and five females which are considered to be specifically identical with the type of *P. thyra* from Nevada. Dr. Henry Dietrich of Cornell University kindly loaned the type of *thyra* for examination, and it agrees with the males from California in all details except that the sclerotized structure of the aedeagus in ventral view appears to be composed of a single pair of smooth-surfaced appendages, divergent at the tips and tapering to sharp points, whereas the California males have a small pointed spine or tooth midway between the base and tip of each long appendage. The ninth segment of the type of *thyra* is mounted on a slide, and the details of the aedeagal structure are not clearly visible; auxillary spines may be present but are not readily seen.

*Female*.—In general features similar to the male except for slightly larger size. The subgenital plate is produced over the ninth sternite and is very similar to that of *P. campanula*, described below, but is perhaps somewhat shorter in length.

*Allotype* female — 6 MILES SOUTH OF MIDDLETOWN, LAKE COUNTY, CALIFORNIA, May 12, 1926, deposited in the collection of the California Academy of Sciences. A male and four additional females were taken with the allotype, and an additional male was collected the day before, May 11, 1926, at the same locality.

*Peltoperla (Soliperla) campanula* Jewett, new species

Length to wing tips: male 16-17 mm.; female 18-20 mm. Length of body: male 11-12 mm.; female 13-14 mm.

General color dull yellowish brown. Head short, not as wide at compound

eyes as posterior width of pronotum but as wide as the anterior border. Head yellowish with a dark area between and anterior to the ocelli. Distance between ocelli about the same as distance of either to compound eye. Pronotum with a median, somewhat irregular brown stripe; discs yellowish with dark brown rugosities; not quite twice as wide as long, front angles sharp, hind angles broadly rounded. Mesonotum and metanotum brown. Wings not infuscated. Dorsum of abdomen yellowish-brown. Legs brownish dorsally, yellowish-brown ventrally. Antennae and cerci light brown. Cerci with 13 to 15 segments, the basal segment being about as long as the combined length of next three. Two pairs of thoracic gills present, one each on the sides of the meso- and metathorax above and slightly behind the coxae. Each gill is a single thick filament at most about two and one half times as long as wide. Cervical gills absent.

*Male*.—Ninth abdominal sternite bearing a median, slightly raised transverse lobe behind which there is a depressed U-shaped area, distal portion of which is upturned and broadly rounded; ninth tergite unmodified; supra-anal process short and recurved with a heavily sclerotized median structure that is expanded at distal end and bears a row of short teeth across lower edge of front margin (fig. 1B); in dorsal view this structure is widely expanded at distal end (fig. 1A); a flap-like membranous structure lies at either side of median structure as in (fig. 1). Aedeagus in shape of large membranous sac bearing two irregular rows of short sclerotized spinules on its ventral surface (fig. 1C), these usually visible through wall of ninth sternite when aedeagus is in retracted, normal position; dorsally near base are two small membranous lobes at either side, each bearing a short, slender spine; tenth segment narrow; tergite about one-fourth as wide as that of eighth segment, sternite about a third that of eighth segment.

*Female*.—Similar in general features to male but somewhat larger. Subgenital plate produced over ninth sternite and broadly rounded, without a notch, about twice as long as seventh sternite (fig. 1D).

*Nymph*.—A mature nymph taken at the same locality on the same date as the holotype is described as follows: Length of body: 13 mm. Body brown, roach-like, covered with fine light hairs. External gills as described above for adult. Stout spines or bristles distributed as follows: on all borders of pronotum with those on front margin longest, and in a small patch near middle of rear margin; in a transverse row across middle of mesonotum and metanotum; scattered on wing covers and on their outer and posterior borders, with a prominent patch near posterior margin of each cover; as a fringe around entire margin of anterior ventral plate of thorax, and on sides and posterior margins of other two plates; as a fringe completely around hind margin of each abdominal segment; as a fringe around each of twenty-four segments of right cercus (some segments of left cercus missing); on subanal lobes; a row each on anterior and posterior outer margins of coxae; a row on posterior outer margin of trochanter; along upper and lower outer margins of femur and in a terminal band; in three longitudinal rows and terminal band on tibia. The femur is deeply grooved below on its outer end to hold the tibia when folded. Each sternum of thorax with a plate overlapping backwards (fig. 1E).

The mouthparts differ from described nymphs of other *Peltoperlae* from western North America. Galea much exceeding the lacinia, with a tuft of hairs at the tip (fig. 1G); lacinia with a broad blunt tip that is somewhat excavated ventrally and with no inner spines; paraglossae curved and slightly longer than the glossae (fig. 1F), without a small segment at the tip; mandibles with a few wedge-shaped teeth and a curved hard surface behind them.

*Holotype* male and *allotype* female—OXBOW SPRINGS, HOOD RIVER COUNTY, OREGON, May 19, 1940, S. G. Jewett, Jr. Paratypes, all from Oregon, as follows: same data as for holotype and allotype, ten males, one female; same data except April 18, 1940, two males; same data except May 26, 1940, six males, three females; Wahkeena Falls, Multnomah County, May 3, 1947, S. G. Jewett, Jr., seven males, two females (one pair in copula); Silver Creek Falls, Marion County, July 14, 1934, J. Schuh (Illinois Natural History Survey collection), one male; same locality except August 2, 1948, K. M. Fender, one male, one female; Hood River Meadows, Hood River County, July 18, 1947, K. M. Fender, one male. Holotype and allotype deposited in the collection of the California Academy of Sciences. Paratypes deposited in the collections of the following: the writer, Wm. E. Ricker, California Academy of Sciences, Cornell University, and the Illinois Natural History Survey.

This new species is close to *Peltoperla (Soliperla) thyra* Needham and Smith, but is readily separated from that species in having an unmodified ninth tergite and in details of the male genitalia, in particular the row of small sclerotized spinules of the aedeagus.

#### *Peltoperla (Soliperla) quadrispinula* Jewett, new species

Generally similar to *P. campanula*, described above, in size and color.

Male—Ninth abdominal sternite with a lobe similar in size and shape to that of *P. campanula*, and the shape of the sternite is much as in that species; ninth tergite shallowly excavated on hind margin as described for *P. thyra*. Supra-anal process very similar to that of *P. campanula* in size and shape. Aedeagus bears two pairs of long, sclerotized spines (fig. 2), which can usually be seen through wall of ninth sternite when aedeagus is in retracted, normal position. Tenth segment similar to that of *P. campanula*.

*Female*—Subgenital plate is produced over ninth sternite and broadly rounded as in *P. campanula* and *P. thyra*, and on the basis of available material cannot with certainty be separated from these species.

*Holotype* male and *allotype* female: WRANGLE GAP CAMP, ROGUE RIVER NATIONAL FOREST, JACKSON COUNTY, OREGON, Aug-

ust 11, 1950, K. M. Fender. Paratypes as follows: same data as for holotype and allotype, one male; Coffee Creek, Trinity County, California, June 7, 1934, E. C. Van Dyke, one male. Holotype and allotype deposited in the collection of the California Academy of Sciences. Paratypes deposited in the collections of the writer and the California Academy of Sciences.

In addition to the above material, the writer's collection contains a male and a female of this species from a small tributary of Big Creek, Clatsop County, Oregon, taken by him May 28, 1949; these specimens are excluded from the paratypic series because the aedeagus of the male has been lost.

This new species is readily distinguished from allied species in the male by the sclerotized spiny structures in the aedeagus and is separated from *P. companula* by the slightly depressed posterior portion of the ninth tergite.

#### Sierraperla Jewett, new subgenus

Study of both adult and nymphal material of *Peltoperla cora* Needham and Smith reveals that the shape and location of the gills are different from those of species of the subgenus *Yoraperla* Ricker or other described subgenera of *Peltoperla*, and the nymph differs in additional details. It is therefore felt necessary to propose a new monotypic subgenus for the species *cora*, a description of the nymph of which follows.

Type of subgenus: *Peltoperla cora* Needham and Smith.

#### PELTOPERLA (SIERRAPERLA) CORA Needham and Smith

1916. *Peltoperla cora* Needham and Smith, Can Ent., 48:86, male and female.  
1925. *Peltoperla cora* Needham and Claassen, Monog. Plecop. pp. 172-173.  
1952. *Peltoperla (Yoraperla) cora* Ricker, Syst. Studies Plecop., p. 157, placed in new subgenus *Yoraperla*.

A nearly mature nymph from Howell's, Plumas County, California, collected August 29, 1946, by Harry P. Chandler, is described as follows:

Length of body 13 mm. Body brown, some fine, pilose hairs on body but general appearance is smooth, roach-like in aspect although less so than are species of the subgenus *Yoraperla*. Stout spines or bristles distributed as follows: at outer anterior and posterior corners of pronotum; on lateral and hind margins of the mesonotal and metanotal wing covers (sparse on this specimen which may not be typical in this respect); on lateral margins of head below compound eyes; as a border completely around hind margin of last three abdominal segments, as a border across sterna of next three seg-

ments, absent or nearly so on first three segments; as a fringe around anterior border of twenty-one segments of the cercus (distal segment or more missing); on subanal lobes; on the outer borders of coxae; on outer border of trochanter; on sides and distal end of outer face of flattened femur; on sides and distal end of outer face of little-flattened tibia. Femur grooved below, tibia capable of folding back along its inner, lower margin; sternal plates overlapping posteriorly (fig. 3). One pair of external gills, finger-like, in cervical region; two gills, one above the other and posterior to each coxae of prothorax and mesothorax; and one gill behind each coxae on the metathorax in the position of upper gills on prothorax and mesothorax. Upper gills on each segment bilobed, forming a T, the arms extending dorsad and ventrad; a basal stub or short lobe present on lower gill of prothorax and mesothorax; all gills robust. Posterior portion of terminal abdominal tergite of nymph greatly extended posteriorly and upturned to a pointed tip, resembling that of some species of *Pteronarcys*. Galea about equal to lacinia in length, tip turned slightly outward and with a tuft of fine hairs (fig. 3B); lacinia with an outer and inner tooth, tips of both chisel-shaped; paraglossae slightly curved, and only a little longer than glossae (fig. 3A).

#### *Nemoura wahkeena* Jewett, new species

Length to end of body: male 4 mm.; female 4–5 mm.; both sexes brachypterous. General color light brown. Four cervical gills, each composed of two compressed filaments which are branched once or twice beyond the base; length of each gill about six times its width at the base. Head wider than pronotum, dark brown except for a paler area beyond the anterior ocellus. Pronotum about as wide as long, narrowed in width posteriorly and with the angles broadly rounded, generally dark with light lateral and posterior margins. Forewing reaching to about the middle of the metanotum, hind wings slightly shorter. Antennae composed of 27–32 segments, equal to or slightly greater than the length of body.

*Male*—Abdominal segments brown, the eighth, ninth, and tenth most heavily sclerotized; ninth tergite posteriorly with wide crescentic membranous area; ninth sternite greatly produced behind and with a lobe. Cerci small, curved, sclerotized on outer faces, concave and membranous on inner faces, tipped with a tiny robust spine. Supra-anal process recurved, and from above, widest in the middle as in (fig. 4), membranous dorsally, sclerotized ventrally. Subanal lobes double, an inner strongly sclerotized lobe which ends in a tapered, outwardly-directed point and an outer lobe which is membranous.

*Female*—In general features similar to male. Cerci are unmodified. Seventh sternite bulbous, membranous, extending over anterior half of eighth sternite (fig. 4B); eighth sternite largely sclerotized, on posterior median margin is visible a strongly sclerotized narrow ring surrounding oviduct; ninth sternite is largely sclerotized, tenth, only slightly so.

*Holotype* male and *allotype* female, taken in copula: WAHKEENA FALLS, MULTNOMAH COUNTY, OREGON, April 5, 1947, S. G. Jewett, Jr. Paratypes: three males, five females, including a pair in copula, same data as for holotype and allotype. Holotype and allotype

deposited in the collection of the California Academy of Sciences. Paratypes deposited in the collections of the writer, Wm. E. Ricker, and the Illinois Natural History Survey.

This distinctive small species can be readily separated from described species of *Nemoura* by the extreme brachyptery of both sexes, by the shape of the gills, and by the distinctive subanal lobes of the male. The male supra-anal process, particularly its expanded middle portion in dorsal view, also distinguishes it from described males of the subgenus *Zapada* Ricker to which it is tentatively assigned.

#### *Nemoura spiniloba* Jewett, new species.

*Male*—Length to end of body: 6 mm. Length to wing tips: 8 mm. General color brown. No external gills in male holotype. Head dark brown, wider than pronotum; pronotum generally dark in color, wider than long, narrowed posteriorly with anterior angles rather sharp, posterior angles broadly rounded; wings normal. Antennae with more than fourteen segments, second segment smaller than large basal segment, about one-half as long as third segment. Abdominal segments brown, first eight without significant sclerotization, ninth and tenth segments wholly sclerotized; ninth sternite produced posteriorly into a lobe and with the usual lobe from its anterior margin (fig. 5A), Cerci sclerotized, a tiny spine at tip. Supra-anal process recurved to posterior border of tenth tergite, wider than deep, and with a slightly enlarged tip from above and from the side, more heavily sclerotized ventrally than dorsally (fig. 5). Subanal lobes broad at base, quadrangular, and with a slender acute process developed from the inner margin (fig. 5A).

*Holotype* male: WOODACRE, MARIN COUNTY, CALIFORNIA, March 31, 1949, L. W. Quate. Deposited in the collection of the California Academy of Sciences.

The genitalia of this new species resemble those of *N. cataractae* Neave but are readily separated by the shape of the cerci and subanal lobes. Should additional material agree with the holotype in lacking gills on the mentum or in the cervical region, it may become advisable to erect a new subgenus for this species. The holotype was a pinned specimen which has been relaxed and preserved in alcohol.

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#### EXPLANATION OF FIGURES

Fig. 1. *Peltoperla (Soliperla) campanula*, male genitalia, lateral aspect; 1A, supra-anal process, from above; 1B, supra-anal process, distal end from below; 1C, aedeagus extruded, ventral aspect; 1D, female subgenital plate; 1E, sternal plates of nymph; 1F, labium of nymph; 1G, maxilla of nymph.

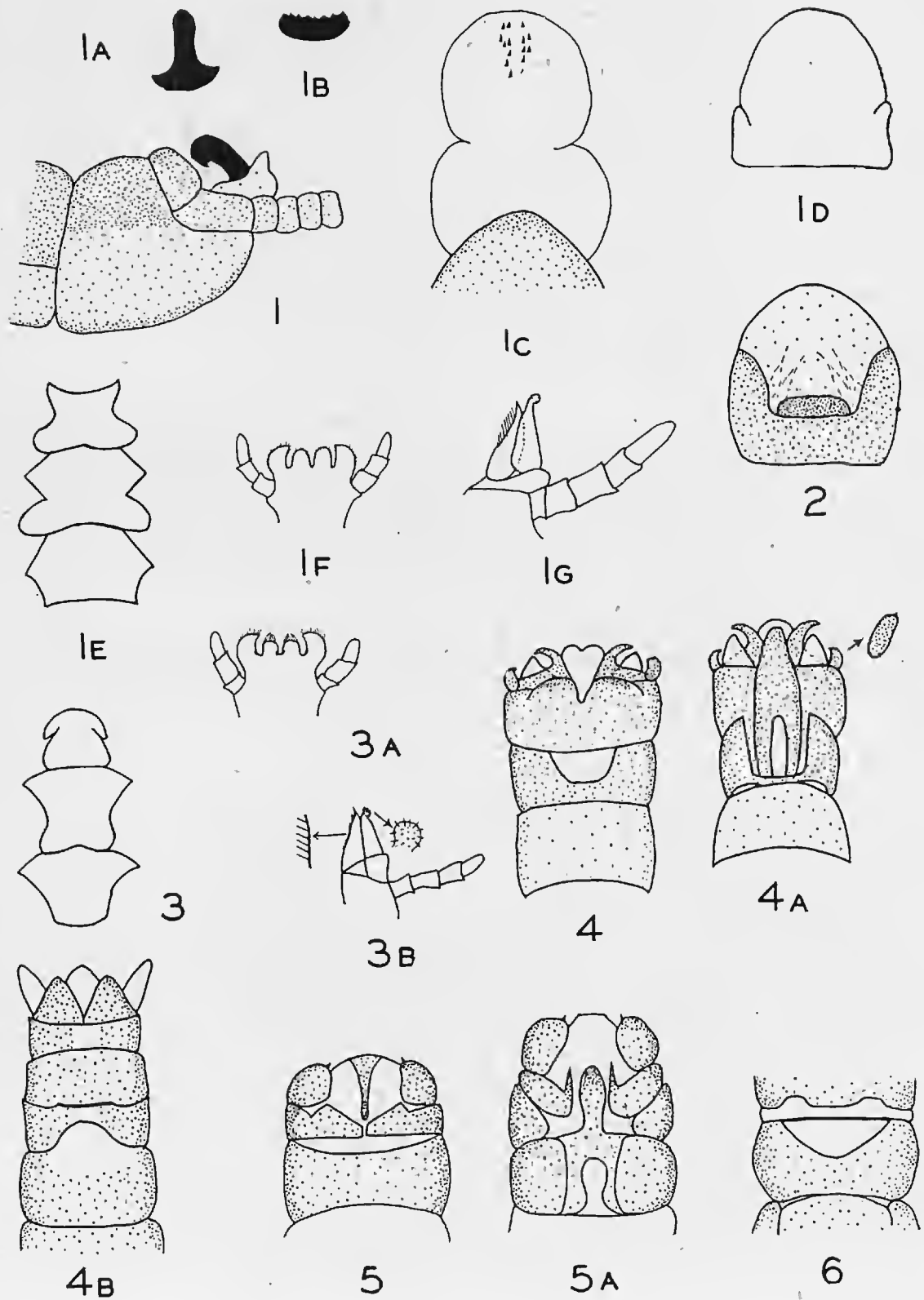


Fig. 2. *Peltoperla (Soliperla) quadrispinula*, male genitalia, aedeagal structure through ninth sternite. Fig. 3. *Peltoperla (Sierraperla) cora*, sternal plates of nymph; 3A, labium of nymph; 3B, maxilla of nymph. Fig. 4. *Nemoura wahkeena*, male genitalia, dorsal aspect; 4A, male genitalia, ventral aspect; 4B, terminal sternites of female. Fig. 5. *Nemoura spiniloba*, male genitalia, dorsal aspect; 5A, male genitalia, ventral aspect. Fig. 6. *Capnia californica*, eighth sternite of female.

### *Capnia maculata* Jewett, new species

Length to wing tips: male holotype 9 mm.; female allotype 11 mm. Length of body: male holotype 7.5 mm.; female allotype 8 mm.

General color in alcohol brown. Head through compound eyes wider than pronotum; lateral ocelli about twice as far apart as distance from inner margins of compound eyes; median ocellus about as far forward from lateral ocelli as distance between them. Pronotum slightly wider than long, with a distinct median longitudinal line, embossed. Venation of wings typical, with  $R_1$  bent upward at its origin and with  $A_1$  bent abruptly caudad at its junction with cu-a and then curved outwardly again. Wings conspicuously spotted, particularly on the outer half of the forewing and the radial area of the hind wing.

*Male*—First eight abdominal segments without special structures; ninth sternite with a prominent lobe at base (fig. 7). Subanal lobes fused distally to form a slender, sharp point. Ninth tergite with a pair of heavily sclerotized knobs on anterior half of sclerite. Supra-anal process of tenth tergite almost square in cross-section, recurved, with blunt tip resting between knobs of ninth tergite. Cerci long, many-segmented.

*Female*—Eighth abdominal sternite (fig. 7A), with a subgenital plate which occupies central part of sternite, distal portion of which extends well beyond posterior margin of segment. A broad median membranous stripe extends longitudinally across tergites one through eight.

*Holotype* male: MARSH CREEK, CONTRA COSTA COUNTY, CALIFORNIA, March 6, 1950, L. W. Quate. *Allotype* female; Colorado Creek and Mines Road, Santa Clara County, California, April 6, 1949, Ray F. Smith. *Paratype* female: Livermore, Alameda County, California, March 31, 1929, E. C. Van Dyke. Holotype and allotype deposited in the collection of the California Academy of Sciences, the paratype deposited in the writer's collection.

This new species differs from all previously described North American species of *Capnia* in having spotted wings and in possessing a ventral appendage on the ninth sternite of the male. It bears resemblance to such Asiatic species as *C. cordata* Kimmins which has "faint smoky clouds" in the apical half of the wings, a bifurcate knob on the ninth tergite, and a ventral lobe on the ninth sternite.

### *Capnia licina* Jewett, new species

*Male*—Similar in general morphological details to other species of the genus *Capnia*. Length to wing tips: 6 mm. Length of body: 5.5 mm.

General color brown, wings hyaline. First six abdominal tergites without special structures; seventh, eighth, and ninth, tergites (fig. 8), with median raised tubercles, that of eighth most prominent; tenth tergite notched medially; membranous areas present on seventh and eighth tergites behind tuber-



cles and anterior to tubercle on ninth tergite. Supra-anal process reflexed, tip upturned and nearly reaching posterior margin of eighth tergite; length of supra-anal process equal to 8 to 10 times its diameter at middle.

*Holotype* male: SMALL CREEK AT THE JUNCTION OF OREGON HIGHWAYS NUMBERS 36 AND 50, CLACKAMAS COUNTY, OREGON, April 22, 1948, S. G. Jewett, Jr. Deposited in the collection of the writer.

This species differs from other described species of North American *Capnia* in possessing both tubercles on tergites 7 to 9 and a reflexed supra-anal process with the tip upturned. The length of the process is less than that of other species where the tip is upturned.

#### CAPNIA CALIFORNICA Claassen

1924. *Capnia californica* Claassen, Can. Ent., 56:57, male.

1925. *Capnia californica* Needham and Claassen, Monog. Plecop., pp. 262-263.

*Female*—Similar in general morphological details to male. Length to wing tips: 8 mm. Length of body: 6-7 mm.

Eighth abdominal sternite (fig. 6), with subgenital plate well developed, sclerotized as in figure 6, not fused with seventh sternite; distal end of plate is bordered by a heavily-sclerotized band; membranous area on eighth sternite varies in shape, almost triangular to crescentic; usual, broad, membranous median stripe extends longitudinally across the first eight tergites.

*Allotype* female—A small creek near Saratoga, Santa Clara County, California, February 25, 1940, S. G. Jewett, Jr. Allotype deposited in the collection of the California Academy of Sciences. With the allotype six additional females and seven males were taken.

#### CAPNIA OREGONA Frison

1942. *Capnia oregona* Frison, Pan-Pac. Ent., 18:2, pp. 63-64, male.

*Female*—In general features similar to male, both sexes having wings uniformly stained with brown. Eighth abdominal sternite with a subgenital plate as in figure 9; a dark brown pigmented area occurs on either side of central, distal portion of sternite, and additional pigmented patches occur on ninth sternite in comparable areas; usual broad median stripe occurs longitudinally across first eight tergites.

*Allotype* female—Benton County, Oregon, 14 miles south of Corvallis, Muddy Creek, February 10, 1938, S. G. Jewett, Jr. Deposited in the collection of the California Academy of Sciences.

The allotype was taken with the holotype and several other specimens of this species, but Frison apparently failed to note the distinctive wing color of this species and consequently did not associate the sexes.

### *Rickera* Jewett, new genus

This genus, erected for the new species described below, is tentatively placed in the Isoperlinae because in the male the tenth tergite is entire, and the male subanal lobes resemble those of some species of *Isoperla*. The head and thorax color pattern, the shape of the female subgenital plate, and the lobe on the seventh sternite of the male strongly suggest *Isogenus* in the subfamily Isogeninae as defined by Ricker (1952).

Type of genus: *Rickera venusta* Jewett.

### *Rickera venusta* Jewett, new species

Length to wing tips: male 17-18 mm.; female 20 mm. Length of body: male 12-14 mm.; female 14-16 mm. General color gray-brown with yellow markings on head and thorax and with fumose wings.

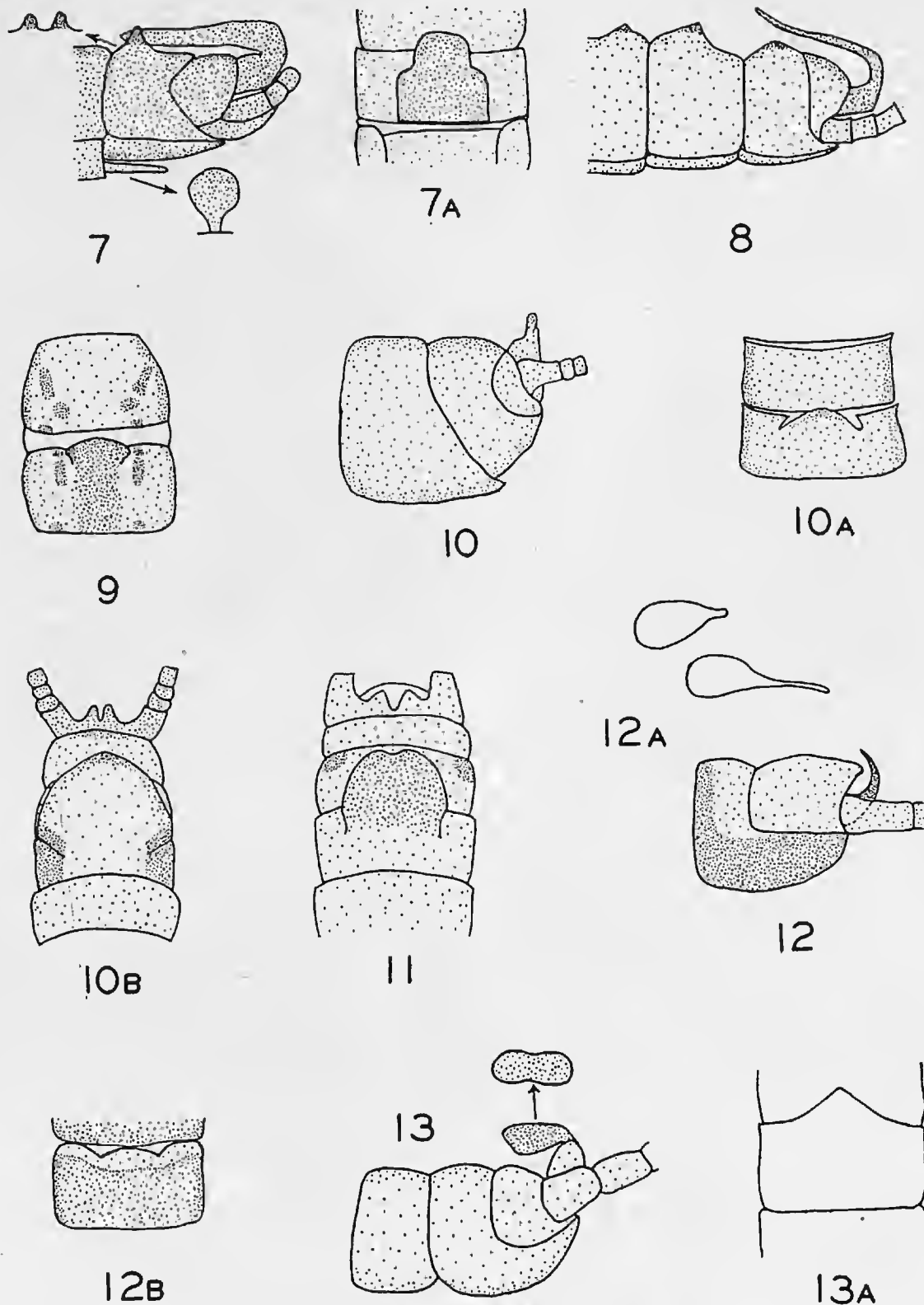
Head at compound eyes slightly wider than prothorax, mostly yellow within ocellar triangle, a large yellow spot anterior to forward ocellus, head yellow behind posterior ocelli except for brownish areas on either side behind the compound eyes. Prothorax with a wide, central yellow band which diffuses into lateral brownish areas, stripe occupying one-fourth to one-third of prothoracic width; prothorax distinctly wider than long, both anterior and posterior angles rounded. First tarsal segment about twice as long as second, the third, two or three times as long as the first and second combined. Wings fumose; subcosta not reaching the cord; a series of several costal crossveins before end of subcosta and two or three beyond in both fore and hind wings; radial sector forked twice beyond the cord. Abdomen with a narrow, median, dorsal stripe that extends across first eight tergites.

*Male*—Subanal lobes (fig. 10) erect, mostly membranous. No supra-anal process. A lobe with an uneven distal margin is present on posterior margin of seventh sternite (fig. 10A).

*Female*—Subgenital plate (fig. 10B) wide, extending across anterior half of ninth sternite, its tip broadly rounded.

*Holotype* male and *allotype* female: ROGUE RIVER AT MUIR CREEK, JACKSON COUNTY, OREGON, June 17, 1949, S. G. Jewett, Jr. Paratypes as follows: Rogue River at Foster Creek, Jackson County, Oregon, June 17, 1949, S. G. Jewett, Jr., two females; Clear Creek, Wasco County, Oregon, June 19, 1952, S. G. Jewett, Jr., one male; Olallie Creek Forest Camp, McKenzie River, Lane County, Oregon, July 15, 1952, S. G. Jewett, Jr., one male. Holotype and allotype deposited in the collection of the California Academy of Sciences. Paratypes are in the collections of the writer and Wm. E. Ricker.

This new genus is named in honor of Dr. Wm. E. Ricker who has done so much on the taxonomy and phylogeny of Plecoptera.



EXPLANATION OF FIGURES

Fig. 7. *Capnia maculata*, male genitalia, lateral aspect; 7A, eighth sternite of female. Fig. 8. *Capnia licina*, male genitalia, lateral aspect. Fig. 9. *Capnia oregona*, eighth sternite of female. Fig. 10. *Rickeria venusta*, male genitalia, lateral aspect; 10A, lobe on male seventh sternite; 10B, terminal sternites of female. Fig. 11. *Isogenus (Kogotus) alameda*, terminal sternites of female. Fig. 12. *Isoperla marmorata*, male genitalia, lateral aspect; 12A, two examples of aedeagal structure; 12B, lobe on male eighth sternite. Fig. 13. *Alloperla (Alloperla) chandleri*, male genitalia, lateral aspect; 13A, eighth sternite of female.

## ISOGENUS (KOGOTUS) ALAMEDA (Needham and Claassen)

1925. *Perla alameda* Needham and Claassen, Monog. Plecop., pp. 78-79, male.

1952. *Isogenus alameda* Ricker, Syst. Studies Plecop., p. 128, placed in *Isogenus* and suggested as belonging in *Kogotus*.

*Female*—Subgenital plate occupies middle half of eighth sternite and extends posteriorly to anterior margin of tenth sternite, broadly rounded with or without a wide shallow emargination (fig. 11).

*Allotype* female—Pinnacles National Monument, San Benito County, California, May 3, 1946, H. P. Chandler. Deposited in the collection of the California Academy of Sciences.

This species is assigned to the subgenus *Kogotus* Ricker (1952) because the tip of the anterior band is coiled inside of the supra-anal process. The paragenital plates are produced upward into rounded, spinulose tips.

Since this species has been recorded only from San Antonio Creek, Alameda County, the following additional California records are listed: Same as allotype, one male; Lake Curry, Solano City, Lake County, April 13, 1950, J. N. Simons, one male; Livermore, Alameda County, May 11, 1930, E. C. Van Dyke, three males, one female; Pope Valley, Napa County, May 8, 1930, E. C. Van Dyke, two females; Livermore, April 30, 1928, one female.

## ISOPERLA MARMORATA (Needham and Claassen)

1925. *Clioperla marmorata* Needham and Claassen, Monog. Plecop., pp. 142-143, female.

*Male*—Generally similar in morphological details to female but somewhat smaller in size. Subanal lobes cylindrical, recurved, and bluntly tipped (fig. 12). Eighth sternite with a shallow, broadly rounded lobe on posterior portion (fig. 12B) which does not extend beyond end of segment. Aedeagus with a sclerotized, translucent process, blade-like at distal end, teardrop shaped in lateral view (fig. 12A); in some specimens base of process is finger-like, in others it appears to taper rapidly to a blunt, rounded end.

*Marmorata* differs from described species of *Isoperla* from western North America in having the anal area of the hind wings fumose, sometimes lightly so, sometimes more heavily, as in the holotype. The head color pattern as described for the holotype, the cylindrical subanal lobes of the male, and the scarcely extended subgenital plate of the female also differentiate it from described species.

*Allotype* male—Eagle Creek, Clackamas County, Oregon, April 16, 1940, S. G. Jewett, Jr. Deposited in the collection of the California Academy of Sciences.

The following additional material of this species has been ex-

amined: Same data as for allotype: seven males, one female; same data except May 5, 1940, two males, five females; same data except June 27, 1948, one male; Soap Creek, Benton County, Oregon, May 24, 1947, E. Holmberg, one male; 3 miles south Camino, Eldorado County, California, June 26, 1948, D. Carter, two males, two females; Middletown, Lake County, California, May 11, 1926, three males; tributaries of Smith Creek, elevation about 5,000 feet, Blairsden, Plumas County, California, June 11, 1952, Wm. E. Ricker, one male, one female, one exuvia.

***Alloperla (Alloperla) chandleri* Jewett, new species**

*Male*—Typical in color for members of the subgenus *Alloperla*, without dark markings on head, thorax, or abdominal segments, presumably greenish in life. Supra-anal process (fig. 13) membranous basally with anterior sclerotized portion bent forward and hinged so that it can be moved vertically on its attachment with membranous basal portion; tip of process is flat in end view; dorsally process is slightly dumbbell-shaped.

*Female*—Subgenital plate (fig. 13A) slopes caudally abruptly towards its center to form a pointed process which reaches anterior border of ninth sternite.

*Holotype* male, *allotype* female, two male paratypes, and one female paratype: 6 MILES EAST OF MIAMI RANGER STATION, ELEVATION 6,000 FEET, MARIPOSA COUNTY, CALIFORNIA, July 4, 1946, Harry P. Chandler. Holotype and allotype deposited in the collection of the California Academy of Sciences, paratypes in the collections of H. P. Chandler and the writer.

This new species differs from other described species of *Alloperla* proper, from western North America in the shape of the male supra-anal process. From *A. elevata* Frison, to which it bears some resemblance, *chandleri* is readily separated by the thickness of the tip of the supra-anal process which is about as deep as broad whereas in *elevata* it is quite thin in lateral view.

ZOOLOGICAL NOMENCLATURE: NOTICE OF PROPOSED SUSPENSION OF THE RULES IN CERTAIN CASES FOR THE AVOIDANCE OF CONFUSION AND THE VALIDATION OF CURRENT NOMENCLATORIAL PRACTICE (A. [N.S.] 18)

Notice is hereby given that the possible use by the International Commission on Zoological Nomenclature of its Plenary Powers is involved in applications relating to the under-mentioned names.